40

Roll No.	2	3	8	3	3	0	1	2	2

IET, Dr. Shakuntala Misra National Rehabilitation University, Lucknow,
Department of Electrical Engineering
Sessional Test – I

Sem & Year: II & I
Subject: Basic Electrical Engineering
Duration: 90 Minutes

Session: 2023-2024
Code: TES 202
Max. Marks: 20

Part A

Attempt all questions **(4×1=4 Marks)**

1. A 10 watt resistor has a value of 120 Ω. What is the rated current through the resistor?

   a) 0.218 A
   b) 0.197 A
   c) 0.288 A
   d) 0.135A

2. Three 2 ohm resistors are connected to form a triangle. The resistance between any two corners is

   a) 6Ω
   b) 2Ω
   c) 3/4Ω
   d) 4/3Ω

3. Power factor of pure inductor is

   a) 1
   b) 0
   c) depends on magnitude of L
   d) Infinite

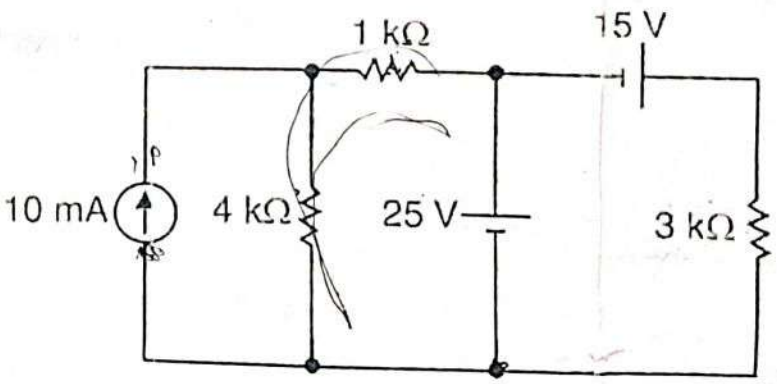
4. Form Factor is the ratio of

   a) average value/ r.m.s. value
   b) average value/ peak value
   c) r.m.s. value/ average value
   d) r.m.s. value/ peak value

Part B

Attempt any two Questions **(2×3=6 Marks)**

1. Using the superposition principle, find the voltage across 1k Ω resistor in Fig. Assume the sources to be ideal.



$\left(\frac{4\times1}{4+1}\right)\times10$

$\frac{40}{5} = 8$

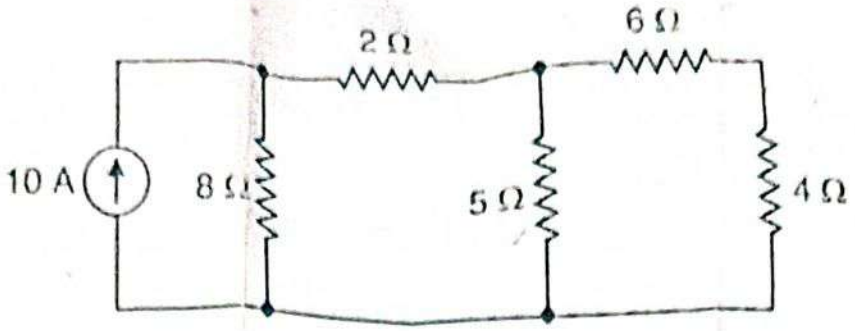
$I = 8\text{mA}$

$V_1 = IR$

$V_1 = 8\times1 = 8\text{V}$

$V_2 =$

2. Using Norton's theorem, calculate the current in the 5 Ω resistor in the circuit shown in Fig.

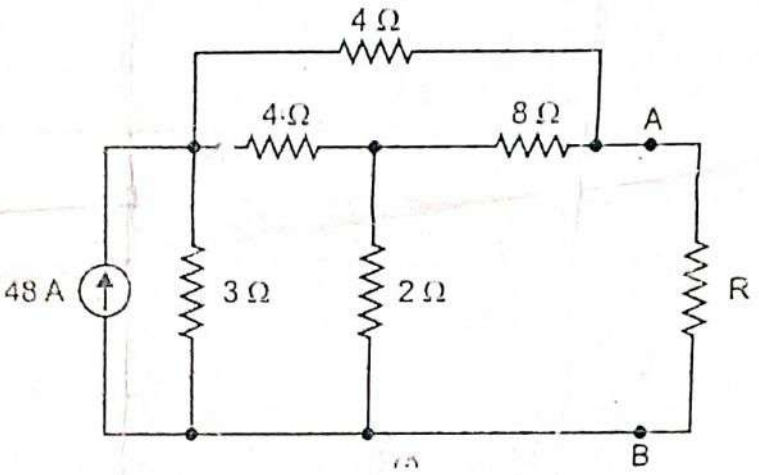


3. Three coils, each having a resistance of 20 W and an inductive reactance of 15 W, are connected in star to a 400 V, 3-phase, 50 Hz supply. Calculate (i) the line current (ii) power factor and (iii) power supplied.

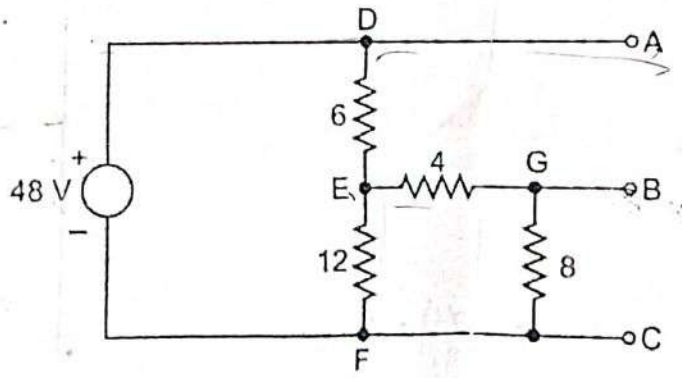
Part C

Attempt any two Questions **(2×5=10 Marks)**

1. In the network shown in Fig. find Norton equivalent circuit at terminals AB , and the maximum power that can be provided to a resistor R connected between terminals A and B



2. Calculate the values of V_{Th} and R_{Th} between terminals A and B in Fig. All resistances are in ohms.



3. Explain the resonance in series A.C. circuit in terms of graphical explanation, resonance curve, Q-factor and bandwidth.